4.12 Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs Federal agencies to make the achievement of environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. Where appropriate, Federal agencies will indicate the potential for disproportionately high and adverse human health or environmental effects on low-income populations, minority populations, and Indian tribes. When conducting NEPA evaluations, DOE incorporates environmental justice considerations into both its technical analyses and its public involvement program in accordance with EPA and Council on Environmental Quality guidance (CEQ 1997).

This section identifies minority and low-income populations in the geographic area near the proposed action. Demographic information from the U.S. Bureau of Census (USBC 1992) was used to identify the minority populations and low-income populations within a 50-mile radius of INTEC, defining the region of influence. This 50-mile region of influence was selected because it was consistent with the region of influence for air emissions and because it includes portions of the seven counties that constitute the region of influence for socioeconomics. The circle has INTEC at its center since the actions proposed in this EIS would be carried out at INTEC. Therefore, INTEC would be the source of most emissions with the potential for producing disproportionate human health or environmental impacts to minority populations, low-income populations, and children. In addition, all of the facility accidents analyzed in Section 5.2.14 of this EIS were postulated to occur at INTEC. Potential impacts to minority populations and low-income populations in the region of influence from implementation of the proposed alternatives are analyzed in Chapter 5.

4.12.1 COMMUNITY CHARACTERISTICS

Demographic maps were prepared using 1990 census data from the U.S. Bureau of Census. These maps were generated with census tracts and Block Numbering Areas (BNAs) defined by the Bureau of the Census, as geographical information system files supplied by Environmental Systems Research Institute, Inc. and provided by Geographic Data Technology, Inc. Census tracts are designated areas that encompass from 2,500 to 8,000 people. Block numbering areas follow the same basic criteria as census tracts in counties without formally-defined tracts. Both are derived from the Bureau of Census TIGER/Line files. Figures 4-24 and 4-25 illustrate census tract distributions for both minority populations and low-income populations, respectively. Environmental justice guidance developed by the Council on Environmental Quality defines "minority" as individual(s) who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic (CEQ 1997). The Council defines these groups as minority populations when either the minority population of the affected area exceeds 50 percent or the percentage of minority population in the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographical analysis.

Low-income populations are identified using statistical poverty thresholds from the Bureau of Census Current Population Reports, Series P-60 on Income and Poverty. In identifying low-income populations, a community may be considered either as a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect. The threshold for the 1990 census was a 1989 income of $12,674 for a family of four. This threshold is a weighted average based on family size and ages of the family members. Table 4-26 presents the U.S. Census poverty thresholds (USBC 1992).

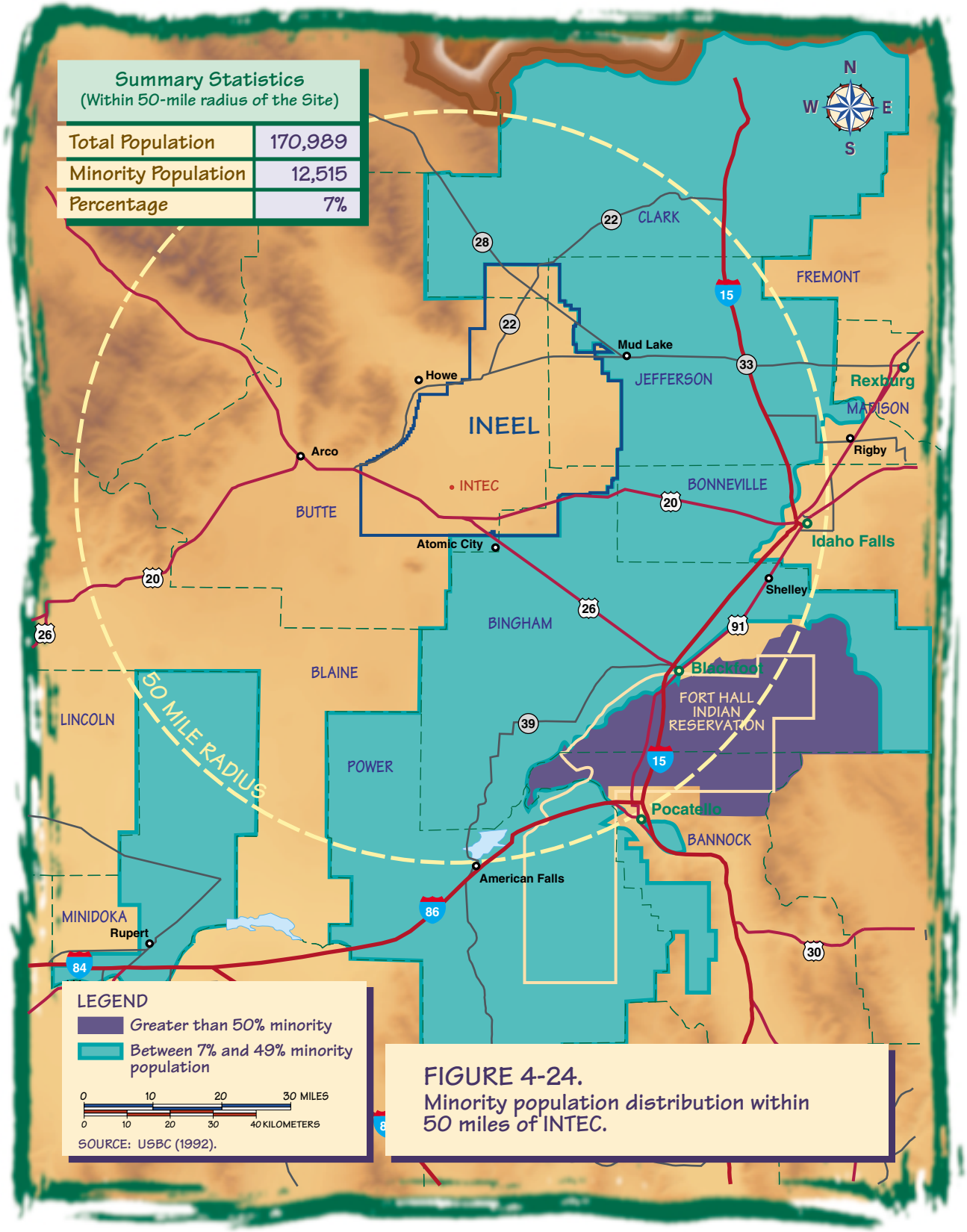

FIGURE 4-24.
Minority population distribution within 50 miles of INTEC.

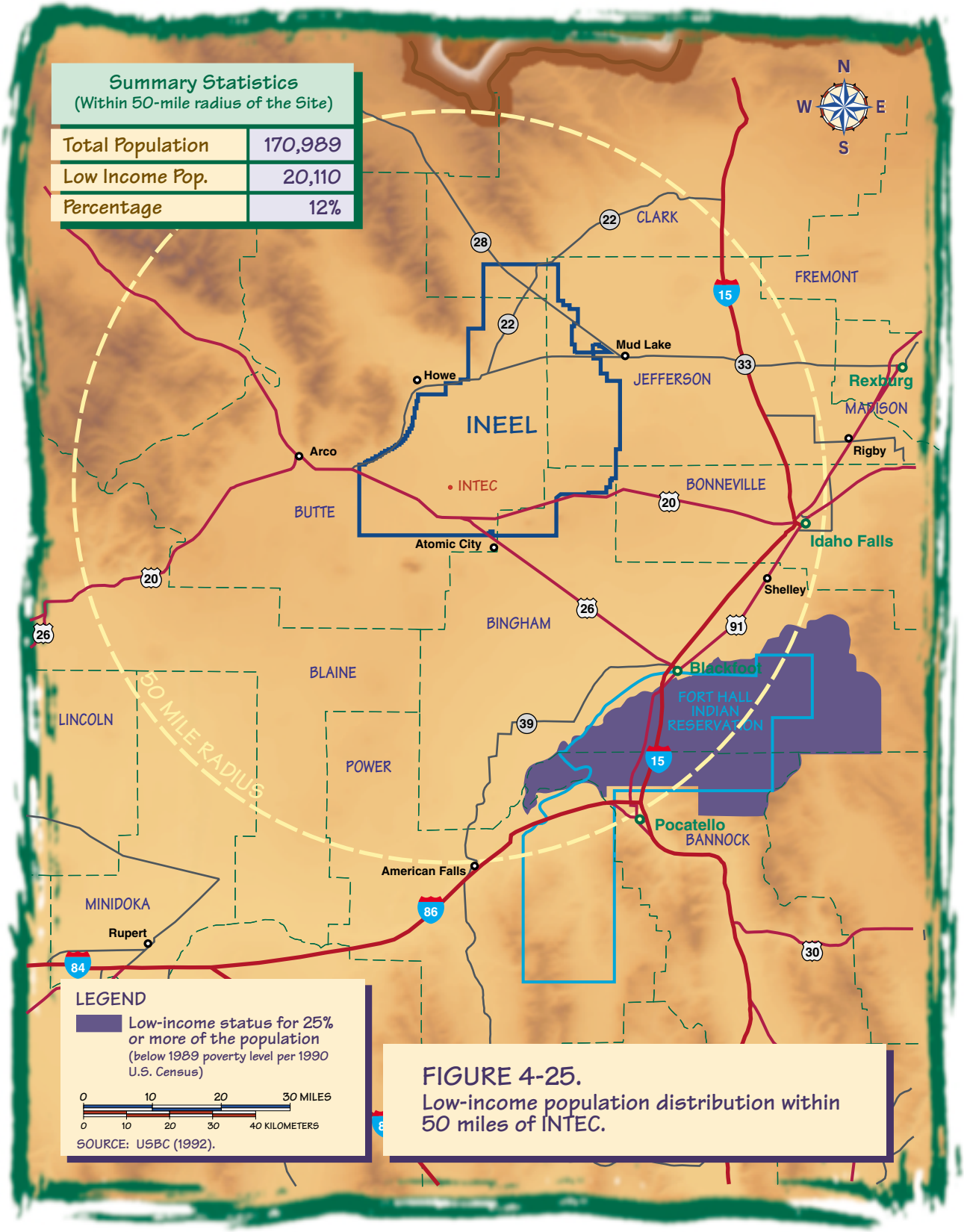

FIGURE 4-25.
Low-income population distribution within 50 miles of INTEC.

4.12.2 DISTRIBUTION OF MINORITY AND LOW-INCOME POPULATIONS

Accordingly to the 1990 census data, 170,989 people resided within the 50-mile INTEC region of influence. Of that population, approximately 12,515 individuals (7 percent) are classified as minority individuals. The minority composition is primarily Hispanic, Native American, and Asian. The Fort Hall Indian Reservation of the Shoshone-Bannock Tribes lies largely within the 50-mile region of influence. The spatial distribution of minority populations residing in 42 census tracts within 50 miles of INTEC is shown in Figure 4-24. In some cases, census tracts lie partly within the 50-mile radius circumference. Because the exact distribution of the populations within such tracts is not available, the data are insufficient to allow a precise count. To address this situation, the entire population of census tracts that were bisected by the 50-mile radius circumference line is included in the analysis.

Of the total population, approximately 20,110 individuals (12 percent) fall within the definition of low-income for the purpose of this analysis. Figure 4-25 shows the spatial distribution of low-income individuals within the 50-mile region of influence.

4.13 Utilities and Energy

This section provides baseline usage rates on current INEEL utilities and energy, focusing on INTEC. It includes water consumption, electricity consumption, fuel consumption, and wastewater disposal. The contents of this section are tiered from Volume 2 of the SNF & INEL EIS (DOE 1995).

Table 4-26. U.S. Census poverty thresholds in 1989 by size of family and number of related children under 18 years.[a]

Size of Family Unit	Weighted average threshold ($)	Children under 18 years								
		None ($)	One ($)	Two ($)	Three ($)	Four ($)	Five ($)	Six ($)	Seven ($)	Eight or more ($)
One person (unrelated individual)	6,310									
Under 65 years	6,451	6,451								
65 years & over	5,947	5,947								
Two persons	8,076									
Household under 65 years	8,343	8,303	8,547							
Household 65 years and over	7,501	7,495	8,515							
Three persons	9,885	9,699	9,981	9,990						
Four persons	12,674	12,790	12,999	12,575	12,619					
Five persons	14,990	15,424	15,648	15,169	14,796	14,572				
Six persons	16,921	17,740	17,811	17,444	17,092	16,569	16,259			
Seven persons	19,162	20,412	20,540	20,101	19,794	19,224	18,558	17,828		
Eight persons	21,328	22,830	23,031	22,617	22,253	21,738	21,084	20,403	20,230	
Nine or more persons	25,480	27,463	27,596	27,229	26,921	26,415	25,719	25,089	24,933	23,973

a. Source: USBC (1992)

4.13.1 WATER CONSUMPTION

The water supply system for each INEEL facility area is provided independent of other facilities by a system of wells. DOE holds a Federal Reserve Water Right permitting INEEL to claim 36,000 gallons per minute of groundwater, not to exceed 11.4 billion gallons per year. Water consumption rates at each facility area are calculated based on the cumulative volume of water withdrawn from production wells for each facility. A total of 1.6 billion gallons of water was pumped from the aquifer by the INEEL during 1996; of that, 0.6 billion gallons was pumped by INTEC (DOE 1997). Comparably, water pumped by INEEL in past years was 1.3 billion gallons and 1.5 billion gallons in 1995 and 1994, respectively (DOE 1997). A majority of this water returns to the aquifer through seepage ponds, with the remaining water lost to the atmosphere through cooling towers and other evaporation processes.

4.13.2 ELECTRICITY CONSUMPTION

DOE presently contracts with Idaho Power Company to supply power to INEEL. The contract allows for power demand of up to 45,000 kilowatts, which can be increased to 55,000 kilowatts by notifying Idaho Power in advance. Power demand above 55,000 kilowatts is possible but would have to be negotiated with Idaho Power. INEEL customers (INTEC, Test Reactor Area, etc.) pay about $0.041 per kilowatt hour, which is a combination of the rate Idaho Power charges and costs the INEEL operating contractor adds for maintaining the INEEL power system and general and accounting costs. Idaho Power transmits power to INEEL via a 230-kilovolt line to the Antelope substation, which is owned by PacifiCorp (Utah Power Company). PacifiCorp also has transmission lines to this substation, which provides backup in case of problems with the Idaho Power system. At the Antelope substation the voltage is dropped to 138 kilovolts, then transmitted to the DOE-owned Scoville substation via two redundant feeders. The INEEL transmission system is a 138-kilovolt 65-mile loop configuration that encompasses seven substations, where the power is reduced to distribution voltages (13.8 or 12.5 kilovolts) for use at the various INEEL facilities. The loop allows for a redundant power feed to all substations and facilities.

Peak demand on this electrical power system for fiscal year (FY) 97 was 39 megawatts, compared to 40 megawatts for FY 1996. The monthly average consumption on this system for FY 97 was 18,481 megawatt-hours. Past years were at 18,158 megawatt-hours for FY 96, 18,541 megawatt-hours for FY 95, 13,181 megawatt-hours FY 94, and 12,666 megawatt-hours for FY 93. Yearly average consumption was 194,000 megawatt-hours for FYs 1993 to 1997. Monthly average consumption of purchased power increased substantially after 1994 because


Emergency Diesel Generator.

the Experimental Breeder Reactor-II was shut down. Power supplied by this reactor prior to 1995 now must be purchased from Idaho Power Company.

4.13.3 FUEL CONSUMPTION

Fossil fuels consumed at INEEL include fuel oil, coal, diesel fuel, gasoline, propane (liquid petroleum gas), and kerosene. All fuels are provided and transported by various distributors to each facility.

Fossil fuels consumed at INTEC include fuel oil and coal. In 1996, INTEC facilities used 97,000 gallons of fuel oil, compared to 280,000 gallons in 1995 (DOE 1997). A total of 14,600 tons of coal was burned at INTEC during the 1996 calendar year, while in 1995 11,800 tons were burned, and in 1994 8,700 tons were burned (DOE 1997).

4.13.4 WASTEWATER DISPOSAL

Wastewater systems at smaller facility areas consist primarily of septic tanks, drain fields, and lagoons. Wastewater treatment facilities are also provided for larger facility areas including INTEC, Central Facilities Area, and Test Reactor Area.

Annual wastewater discharge volume at INEEL for 1996 was 1.2 billion gallons, compared to 1.1 billion gallons in 1995 and 1.4 billion gallons in 1994. The difference between water pumped and wastewater discharge is caused mainly by evaporation from ponds and cooling towers.

4.14 Waste and Materials

This section summarizes the management of materials and wastes (hazardous, mixed low-level, low-level, transuranic, industrial solid, and high-level) and presents an overview of the current status of the various waste types generated, stored, and disposed of at INEEL. This section also summarizes Waste Minimization/Pollution Prevention programs in place to reduce the hazard and quantity of waste generation at INEEL.

The total amount of waste generated and disposed of at INEEL has been reduced through waste minimization and pollution prevention. More detailed descriptions can be found in the *Annual Report of Waste Generation and Pollution Prevention Progress* (DOE 1997a) and the DOE *Pollution Prevention Plan* (DOE 1997b).

INEEL has programs and physical or engineered processes in place to reduce or eliminate waste generation and to reduce the hazard, toxicity, and quantity of waste generated. Waste is also recycled to the extent possible before, or in lieu of, its storage or disposal. In addition, the site has achieved volume reduction of radioactive wastes through more intensive surveying, waste segregation, and use of administrative and engineering controls. These programs and their accomplishments have been described in various documents including site treatment plans (DOE 1998a) and annual progress reports (DOE 1997a).

DOE and the INEEL operating contractor have signed an incentive plan that sets a 5-year goal to reduce the amount of liquid waste going into the Tank Farm by about 43 percent. Waste minimization technologies expected to be used to meet the goal include using non-chemical decontamination systems, improving practices in the Process Equipment Waste Facility, and recycling acids for use in the New Waste Calcining Facility calciner. A key milestone under the settlement agreement between DOE, the State of Idaho, and the U.S. Navy calls for the Tank Farm to be empty of all liquid radioactive waste by 2012. Efforts initiated as a result of the Liquid Waste Minimization Incentive Plan are expected to play a major role in the INEEL's ability to meet this milestone.

Table 4-27 provides a summary of waste volumes for individual waste types at INEEL. Each waste type is then discussed further in the sections that follow.

4.14.1 INDUSTRIAL SOLID WASTE

Industrial and commercial solid waste is disposed at the INEEL Landfill Complex in the Central Facilities Area. About 225 acres are available for solid waste disposal at the Landfill Complex. The capacity is sufficient to dispose of INEEL waste for 30 to 50 years. Recyclable materials are segregated from the solid waste stream at each INEEL facility. The average annual volume of waste disposed of at the Landfill Complex from 1988 through 1992 was 52,000 cubic meters (EG&G 1993). For 1996 and 1997, the volume of waste was approximately 45,000 and 54,000 cubic meters, respectively.

4.14.2 HAZARDOUS WASTE

The INEEL's hazardous waste management strategy is to minimize generation and storage and use private sector treatment and disposal. Approximately 120 cubic meters of hazardous waste are generated at the site each year. Hazardous waste is treated and disposed of at offsite facilities and is transported by the contracted commercial treatment facility. The waste is packaged for shipment according to the receiving facility's waste acceptance criteria. The waste generator normally holds waste in a temporary accumulation area until it is shipped directly to the offsite commercial treatment facility.

4.14.3 MIXED LOW-LEVEL WASTE

Presently, there are about 1,700 cubic meters of mixed low-level waste in inventory at INEEL (DOE 1998a). In addition to the current volume of mixed low-level waste in inventory at the site, approximately 230 cubic meters of mixed low-level waste is generated annually (DOE 1998a). Several mixed waste treatment facilities exist at the INEEL. These facilities currently accept mixed waste from INEEL waste generators only (DOE 1998a).

4.14.4 LOW-LEVEL WASTE

Approximately 170,000 cubic meters of low-level waste have been disposed of at the Radioactive Waste Management Complex (DOE 1995, 1997c). Currently, about 6,000 cubic meters of low-level waste are in inventory at INEEL (Bright 1999). All on-site-generated low-level waste is stored temporarily at generator facilities until it can be shipped directly to the Waste Experimental Reduction Facility for volume reduction or to the Radioactive Waste Management Complex for disposal. DOE expects that the Radioactive Waste Management Complex will stop taking contact-handled low-level waste in 2006 and remote-handled low-level waste in 2008 (DOE 1998b).

4.14.5 TRANSURANIC WASTE

Approximately 65,000 cubic meters of transuranic and alpha-contaminated mixed low-level waste are retrievably stored, and 60,000 cubic meters of transuranic waste have been buried at the Radioactive Waste Management

Table 4-27. Summary of waste volumes awaiting treatment and disposal at INEEL[a]

Waste type[b]	Current inventory (cubic meters)	Annual generation (cubic meters)
Industrial solid[c]	–[d]	52,000
Hazardous waste[e]	None[f]	120
MLLW	1,700[g]	230[g]
LLW	6,000[h]	6,400[i]
Transuranic waste[j,k]	65,000	–
HLW (calcine)	4,200	–
Mixed transuranic waste/ SBW[l]	1,400,000 gallons	–

a. Does not include waste already disposed of at the Radioactive Waste Management Complex or other locations.
b. Waste types: MLLW = mixed low-level waste; LLW = low-level.
c. Source: EG&G (1993); this does not take into account the estimated volume reduction due to the paper pelletizer.
d. Dash indicates no information is available.
e. Source: DOE (1996).
f. Waste is shipped off-site before any significant inventory buildup.
g. Source: DOE (1998a).
h. Source: Bright (1999).
i. Source: Willson (1998).
j. Source: DOE (1995).
k. A portion of the 65,000 cubic meters of transuranic waste retrievably stored at the Radioactive Waste Management Complex may be reclassified as alpha MLLW. It has been estimated that approximately 40 percent of the 65,000 cubic meters is alpha MLLW and 60 percent is actually transuranic waste.
l. Source: Palmer (1999).

Complex (DOE 1995). The Radioactive Waste Management Complex is made up of seven Type II storage modules, each of which can hold up to 4,465 cubic meters of waste in drums or boxes. The total storage capacity is 31,255 cubic meters. The processing capacity of the Advanced Mixed Waste Treatment Facility is 6,500 cubic meters per year and the expected duration of facility operation is 30 years (DOE 1999). All 65,000 cubic meters of the retrievably stored waste were considered to be transuranic waste when first stored at INEEL. In 1982, DOE Order 5820.2 changed the definition of transuranic waste. The new definition excluded alpha-emitting waste less than 100 nanocuries per gram at the time of assay. Since all of the waste was initially considered to be transuranic waste, the alpha wastes were co-mingled in the same containers as the transuranic waste.

DOE has not determined the disposition of the buried transuranic waste (DOE 1995). However, DOE currently plans to treat and repackage the retrievably-stored transuranic and alpha-contaminated low-level waste so that all the resulting waste qualifies as transuranic waste. This waste would then be certified and shipped to the Waste Isolation Pilot Plant in New Mexico for final disposition. The Record of Decision from the *Waste Isolation Pilot Plant Disposal Phase Final Supplemental Environmental Impact Statement* was issued in January 1998 (DOE 1998c) and the first shipments of transuranic waste from the INEEL to the Waste Isolation Pilot Plant occurred in April and August 1999. Since the October 1988 ban by the State of Idaho on shipments of transuranic waste to INEEL, DOE has shipped only small amounts of transuranic waste generated on the site to the Radioactive Waste Management Complex for interim storage.

4.14.6 HIGH-LEVEL WASTE

From 1952 to 1991, DOE processed spent nuclear fuel and irradiated targets at the INTEC. The resulting liquid mixed HLW was stored in the Tank Farm. Mixed transuranic waste/SBW generated from the cleanup of solvent used to recover uranium and from decontamination processes at the INTEC is also stored in the Tank Farm. Although not directly produced from spent nuclear fuel processing, mixed transuranic waste/SBW at INEEL has been historically managed as HLW because of some of its physical properties. For purposes of analysis, the EIS assumes that SBW is mixed transuranic waste.

At present, approximately 4,200 cubic meters of HLW calcine are stored at INTEC. INEEL no longer generates liquid mixed HLW because spent nuclear fuel processing has been terminated (DOE 1995). All liquid mixed HLW produced from past processing has been blended and reprocessed, through calcination, to produce granular calcine. Liquid mixed transuranic waste/SBW is generated from incidental activities associated with operations at INTEC (DOE 1996). Currently, there are approximately 1.4 million gallons of mixed transuranic waste/SBW in storage at INTEC and this is expected to be reduced to about 800,000 gallons by the time processing begins under the proposed action (Barnes 1999).